

Monte Carlo: TPC and CKov PID performance

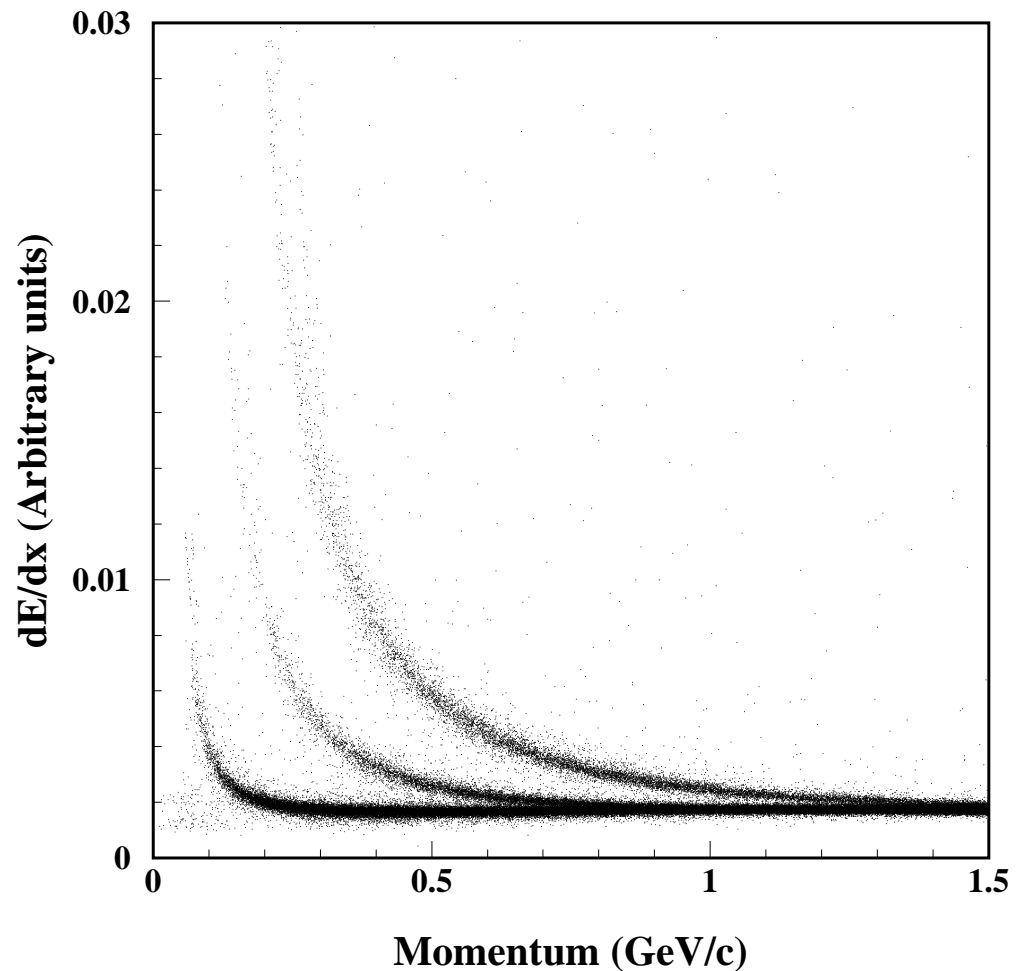
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I have concentrated on:

- ❑ Improving the MC structure, ease of setup, and getting it to work outside of FNAL. (which I won't talk about)
- ❑ Particle ID performance of TPC and CKov

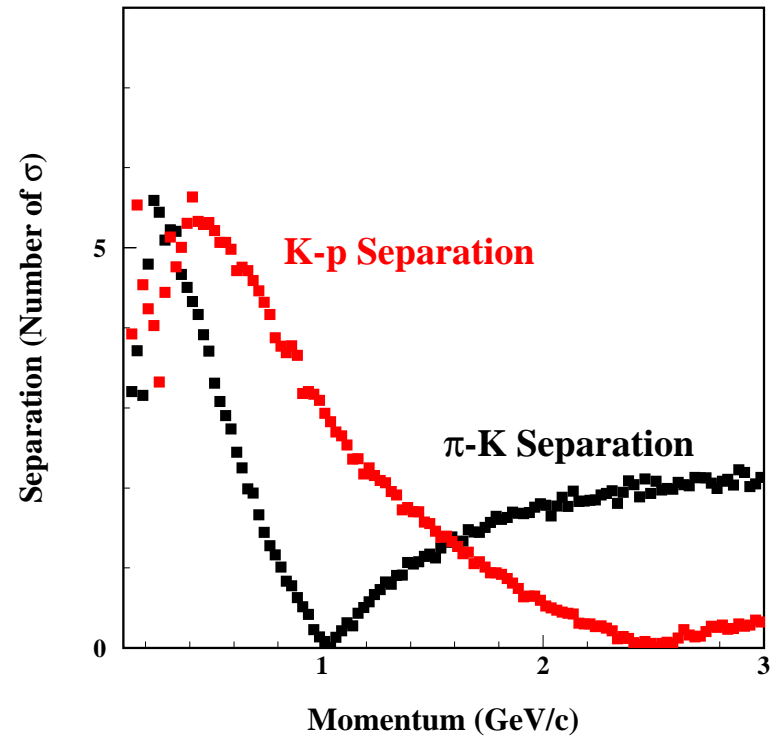
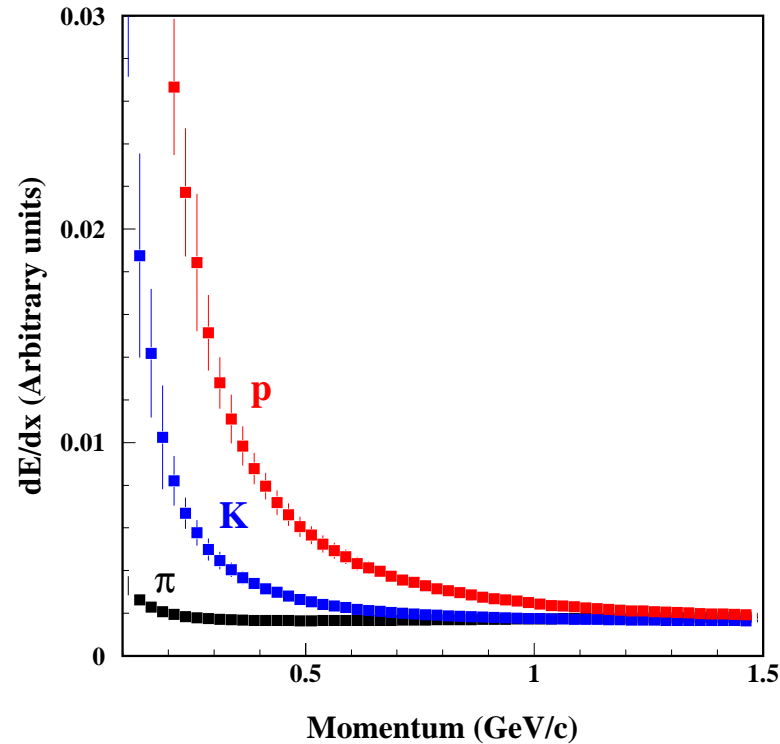
TPC dE/dx performance

- ❑ $dE/dx \equiv$ Median of $\Delta E/\Delta x$ from GEANT hit information in volume above each pad plane.
- ❑ Not propagating charge to pad plane.
- ❑ Require at least 7 pad planes traversed.
- ❑ Lacking statistics at very low momenta
- ❑ Suspect small π contamination in K sample from hadronic showers (using all hits from K and daughters).



TPC dE/dx performance

□ $\pi - K$ separation $\equiv (\mu(\pi) - \mu(K))/(\sigma(\pi) + \sigma(K))$

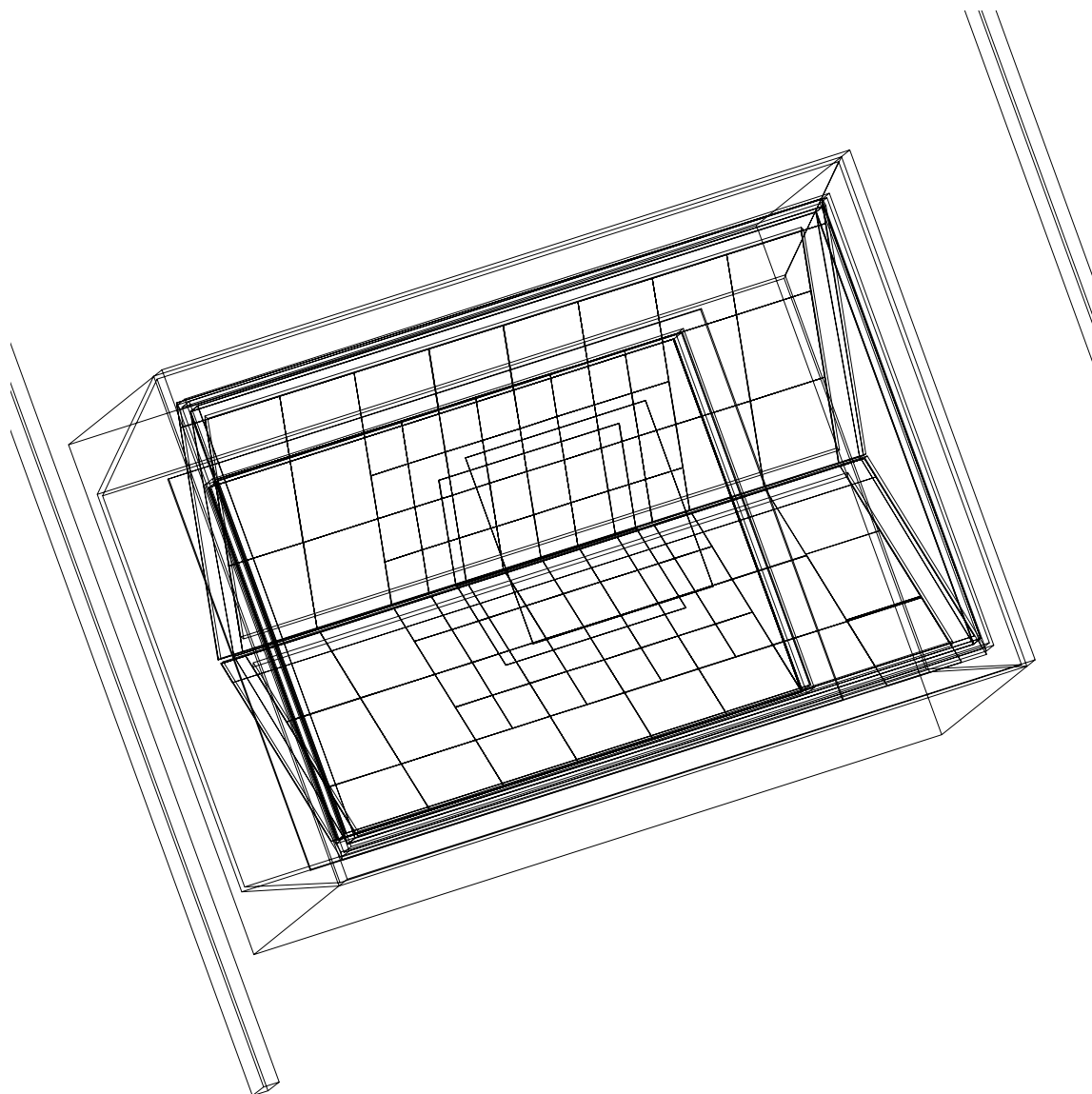


□ 3σ $\pi - K$ up to 0.54 GeV/c

□ 3σ $K - p$ up to 1.0 GeV/c

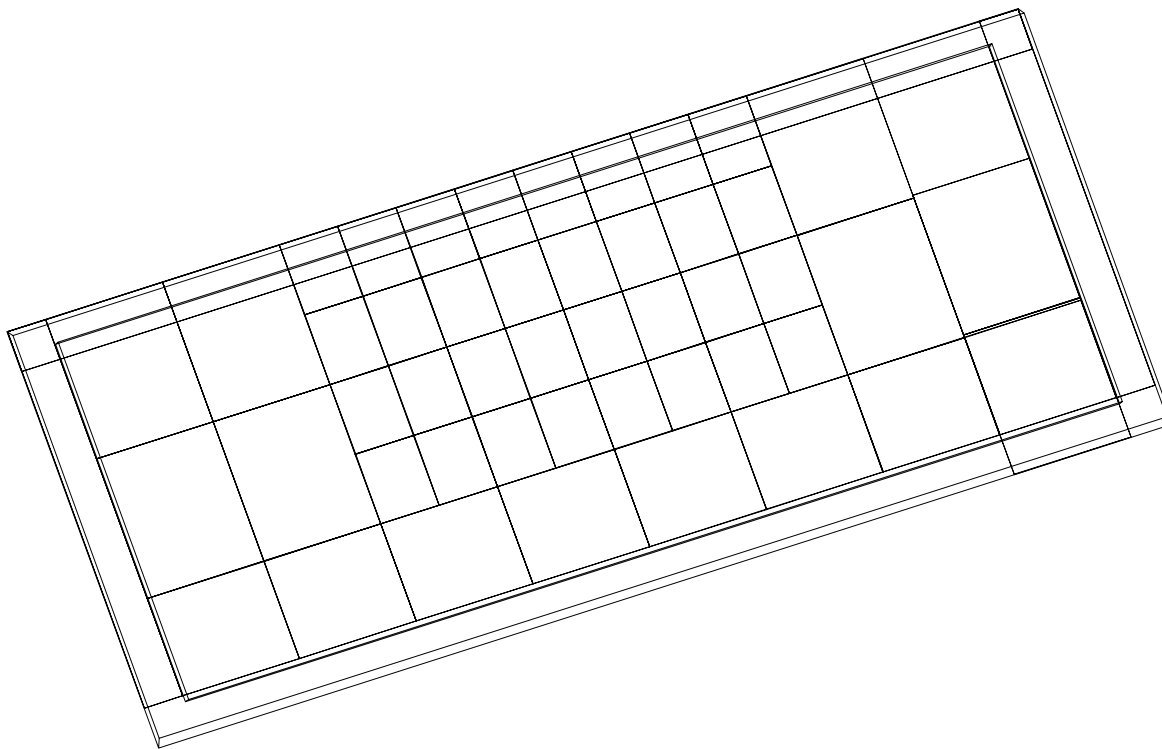
□ Both improve if more pad planes are required.

CKov Geometry from E910 code



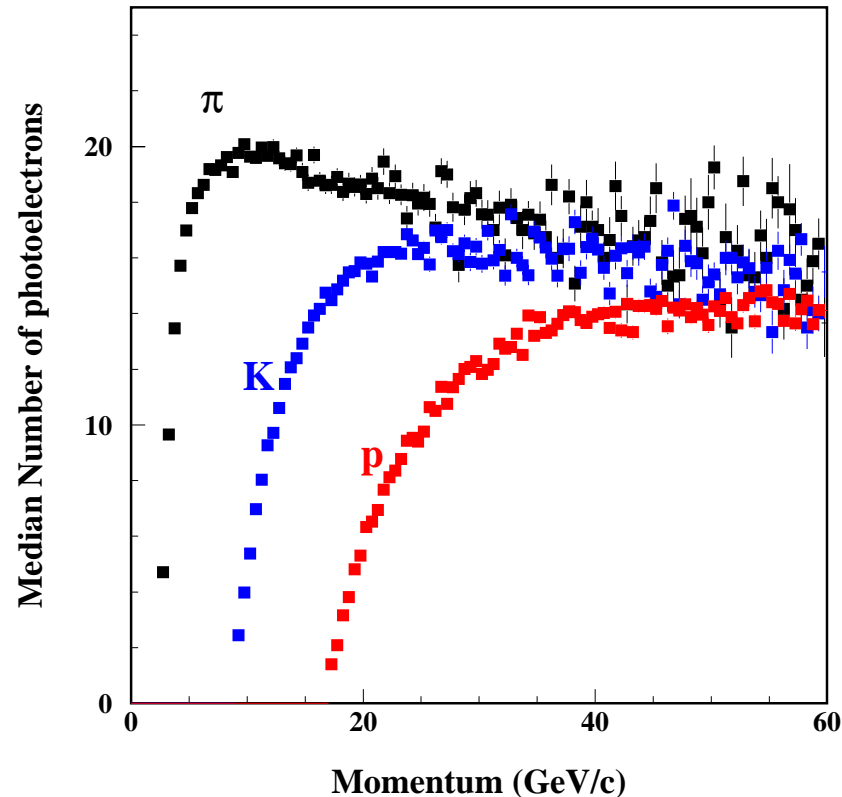
CKov Geometry from E910 code

- 1/2 of the mirrors



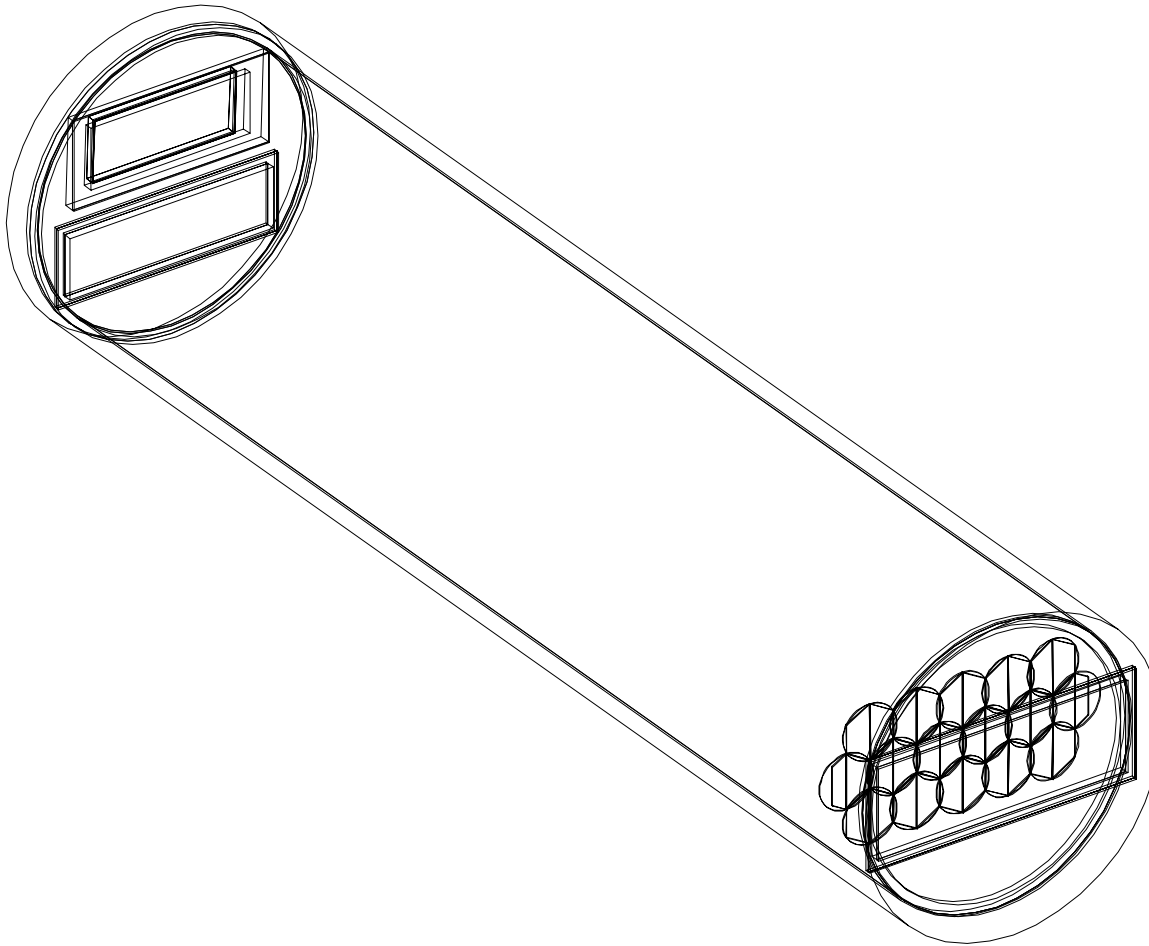
CKov Hits

- ❑ Use optical properties for freon and mirrors from E910 code (call to gsckov)
- ❑ Assume 50% detection efficiency for photons that reach mirrors.
- ❑ Thresholds ok, # of photoelectrons in the correct ballpark (from E766 doc)



- ❑ Still need to do:
 - Account for path length in CKov and normalize to expected # of photoelectrons.
 - Turn into PID performance numbers

RICH geometry from SELEX code



- Have not yet started to put in/analyze hit information